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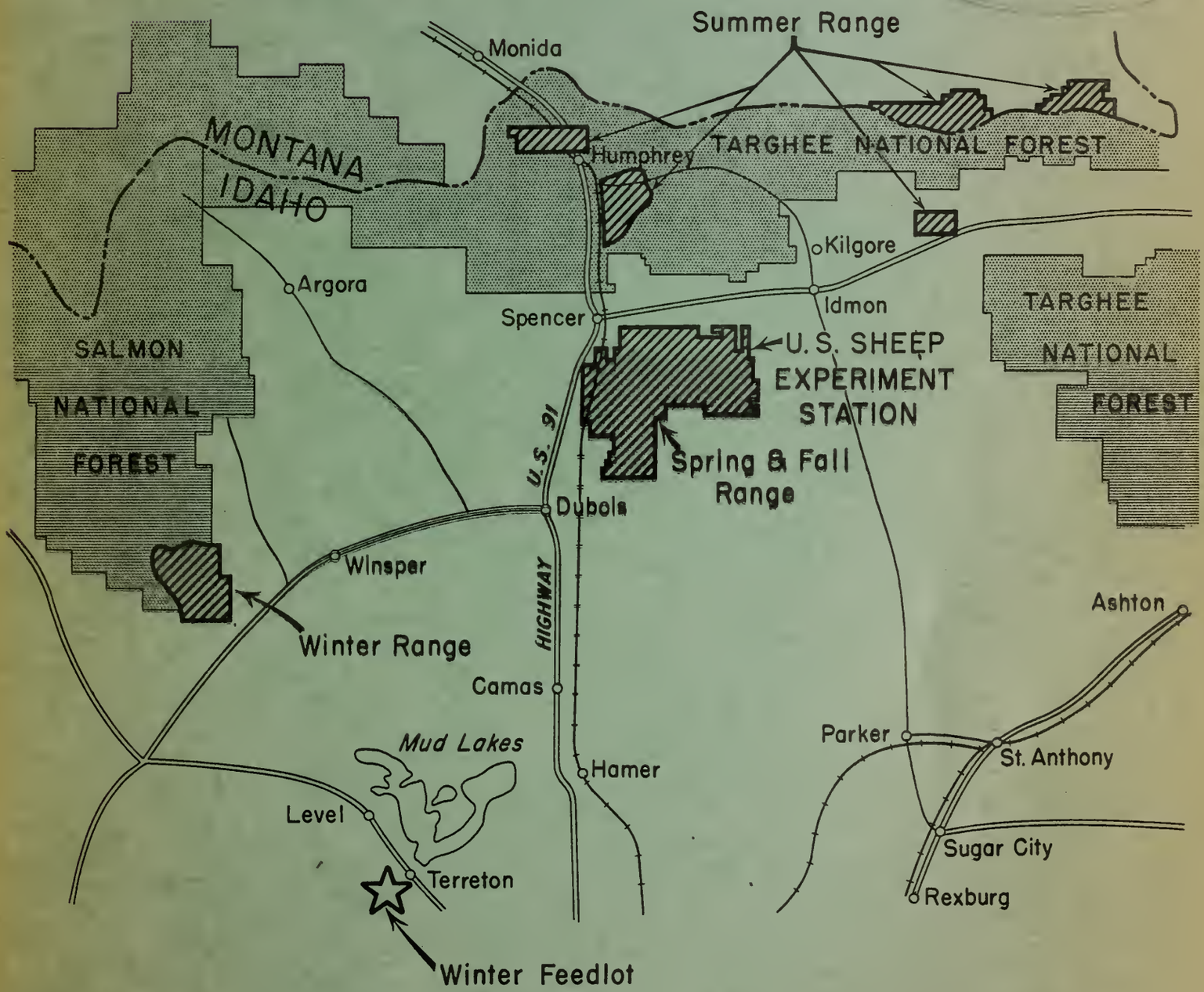
NINTH ANNUAL REPORT OF THE
U.S. SHEEP EXPERIMENT STATION

DUBOIS, IDAHO
JUNE 30, 1946



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ANNUAL REPORT
U. S. Sheep Experiment Station
June 30, 1946

TABLE OF CONTENTS

ROSTER OF PERSONNEL

WESTERN SHEEP BREEDING LABORATORY AND U. S. SHEEP EXPERIMENT STATION
Dubois, Idaho, as of June 30, 1946

Name	Rating	Date entered on duty	General Duties
Nordby, Julius E.,	Animal Husbandman P-6	March 1, 1938	Director
Terrill, Dr. Clair E.,	Animal Husbandman P-5	July 3, 1936	Geneticist Physiologist
Stoehr, John A.	Animal Husbandman P-4	Aug. 28, 1928	Operations
Pohle, Elroy M.	Animal Fiber Technologist, P-3	May 2, 1938	Wool Technologist
Emik, Dr. L. Otis	Animal Husbandman P-3	July 7, 1941	Assistant, Physiology and Genetics
Sidwell, George M.,	Animal Husbandman P-2	July 1, 1941	Assistant, Physiology and Genetics
Keller, Henry R.,	Animal Husbandman P-2	Oct. 16, 1941	Assistant, Wool laboratory
*Wilson, Lowell O.,	Scientific Aid SP-4	July 1, 1943	Assistant, Wool laboratory
Sidlinger, Henry M.,	Administrative Asst., CAF-7	June 1, 1945	Administrative Assistant
Schaefer, Chester F.,	Clerk, CAF-3	June 22, 1936	Clerk
**Hensley, Gladys L.,	Clerk-Typist CAF-3	April 2, 1945	Clerk-Typist
*Taylor, Jessie S.,	Clerk-Typist CAF-2	May 29, 1945	Clerk-Typist
**Harmon, Bennie D.	Clerk, CAF-2	April 1, 1946	Clerk
**Laird, M. Jean	Clerk, CAF-2	Jan. 14, 1946	Clerk
Jeffery, Lee C.,	Foreman of Farm Laborers, CPC-6	June 7, 1924	General maintenance pumps, equipment
Rasmussen, Henry, Jr.,	Farm Laborer CPC-5	July 1, 1926	Farm Laborer
Hohman, Max E.,	Farm Laborer CPC-4	April 1, 1935	Shepherd
Landacre, Harold E.,	Farm Laborer CPC-4	April 6, 1939	Truck driver, general maintenance
Goldman, James R.,	Farm Laborer CPC-4	May 1, 1939	Shepherd
*Howard, John H.,	Farm Laborer CPC-4	Oct. 2, 1944	Shepherd
*Walker, Raymond	Farm Laborer CPC-4	April 6, 1944	Shepherd & Camp Tender

Phillips, Walter E.,	Farm Laborer CPC-4	March 16, 1935	Truck Driver
Powell, Fred A.,	Farm Laborer CPC-4	May 11, 1935	Teamster
*Waymire, Isom	Farm Laborer CPC-4	Oct. 1, 1945	Shepherd
Maloney, George	Farm Laborer CPC-4	June 10, 1946 (Reinstated)	Farm Laborer
**Gibbs, John H.,	Farm Laborer CPC-4	Oct. 3, 1945	Farm Laborer
**Swink, Albert B.,	Farm Laborer CPC-4	May 31, 1946	Shepherd & Farm Laborer
**Larson, John T. Jr.,	Farm Laborer CPC-4	June 10, 1946	Farm Laborer
Nantz, Dorinda R.,	Unskilled Laborer	June 16, 1941	Janitress & Cook

* Employees on War Service Appointments.

** Employees on Temporary Appointments.

CHANGE AND RESEARCH

Change is the pulse of progress,—the inevitable, unavoidable characteristic of a progressive civilization. There is change in the clothes we wear, in the food we eat, in the things we use, in the crops we grow. Change is evident in domestic and world markets, in industry, in communication, in materials which industry demands,—accelerated change everywhere. It is the natural corollary of free enterprise.

We are warned now that the advanced technologies of today will presently activate peacetime industry far beyond any dreams of a decade ago; also that this activation will be evident not only in our own country but it will leaven industry in all industrial countries and most assuredly will extend the frontiers of industry into some countries now relatively inactive in industrial enterprise. This war with its extended ramifications into almost every known area of the globe may also tend to cosmopolitanize industry and the consumption of its products.

Accelerated change in kind, quantity and quality of merchandise, however, is generally paralleled by the need for basic readjustment in the production and marketing economy of staple products which the new merchandise is in part designed to replace, and any industry that does not keep attuned to the basic economic needs may court disaster.

The application of science to industry is the fundamental safeguard against obsolescence and disaster in industry in this period of unprecedented stimulation and change. And industry is pushing forward on every front with a veritable army of research staffs, eagerly searching for more basic facts which control the behavior of materials or energy and which, when creatively applied, yield new merchandise that may be of greater value or be more salable, or both. Industry is also paralleling this type of research activity with researches in applied production and marketing economics.

The transition in industry will also be felt in agriculture. It may be keenly felt in the economics of agriculture and in rural life. Some of the inevitable changes will be pleasant; others will be very challenging. Still other changes may be fully as threatening to agriculture as they will be to industry or to those phases or individuals in agriculture and industry that permit orthodoxy to impede the forward march with change for basic improvement in the economics of the products involved.

In our western agriculture, we cannot overlook the impact which synthetics manufactured from wood pulp, casein, peanut hulls, soy beans, and other sources of fiber may have upon wool,—sources which are also of the soil. The range sheep industry will not be overlooked by change in a revamped foreign and domestic industry and agriculture in its need for adjustment, and the more directly or

indirectly the products of the soil such as wood pulp, casein, and plant fibers become essential in the production of substitutes which will replace staple products of the soil, the more challenging the change becomes.

Organized research in the fundamentals of any productive activity is designed to guide man into new ways of doing things which he can no longer do the way he is doing them now. Fundamental research is the search for truth. One of its applications is to make old or new products fit more efficiently into a changing economy. This applies to agriculture as well as to industry. To the degree in which research is successful, it adds economic stability to industry and agriculture. Research is constantly challenging empirical methods,--the conventional way of doing things. And all of the burden of proof in a progressive civilization does not lie with the research worker who is exploring new methods. The burden of proof rests as well with the person who assumes that the empirical, the old established method, is adequate in meeting new demands--demands that are predicated upon a revamped economy. Sheepmen are part of a civilization characterized by change, and no empirical and established system of breeding, feeding, management or marketing can possibly lay claim to immortality.

As research in basic principles of materials, energy, and competitive economy is the catalyst, the truth-searching forerunner of change in industry, so must research in the basic principles of biological realities and in economic truths be the forerunner of change in the improvement of domestic animals and in the marketing of their products. The day of spectacular advances in fundamental improvement of conventional methods applied to animal improvement is quite clearly gone. Production of wool and lamb per unit has now reached a relatively high point, and the higher production goes, the more difficult it is to make spectacular improvement in range sheep production per unit. But conservative improvement will progressively yield its reward in contributing stability to a changing economy. It appears, henceforth, that progress in the economic value of domestic animals will not be made by a few brilliant manipulations of chance procedure of courageous individuals, but rather by well-organized efforts of research workers pushing forward on many fronts, the same as in industry, and by the full cooperation of producers in the field activating into production the advances that research yields.

Sheep have a dual role in the economy of western agriculture, namely, the production of meat and wool. As the topography, temperature and feed conditions vary, there are corresponding variations in the emphasis on meat and wool production. In areas of relatively good feed conditions, the income from meat is somewhat higher than the income from wool. In sparser feed areas the income from wool approaches and may exceed the income from meat. These, in general,are the conditions that have prevailed for some time. It does not necessarily follow that the same ratio of income will continue to prevail in years to come in the respective areas where feed conditions may remain in general the same. Wool and meat are not both subject to influence by the same competitive enterprises. Now is it likely that the

political idiosyncrasies of man and his clothing and diet habits will insure a status quo in the present income ration of wool and meat in the industry. For instance, if the agencies that create fashions in clothing receive enough encouragement from the manufacturers and salesmen of synthetic fiber material, and the supply of this material moves into trade channels at an ever accelerated rate, it is not so difficult to see how the consuming public may directly influence the present proportion of income from wool and meat in the sheep ranching industry.

The over-all situation may appear somewhat insecure for the wool producing industry. But, competition stimulates salesmanship. It stimulates inquiry into basic production economies. It stimulates inquiry into marketing economies. And, out of the sum total of these inquiries and the application of discoveries arising from them will also arise the new economies upon which competitive change is predicated. And, if we were to be very frank, perhaps we would be tempted to say that it is difficult to see how, with our sincere appreciation of the problems ahead, we can do otherwise than give our full and unbiased support to fundamental research efforts and to the application of basic gains that accrue to the industry through research.

The research worker is a human being. He is subject to influences that often divert the course of fundamental research problems onto detours that generally work out to be blind alleys. In working with domestic animals we are all tempted, no doubt in large part, because we thoroughly enjoy to look at those that conform to a pleasing pattern, to lay too much emphasis upon the outward pattern. In fact we may even accept that as the result of research. Whereas, it may not be the result of basic research at all. It may be the result of the chance introduction of a sire that nicks well with the females at hand and a lot of good feed. Or, it may be the result of the introduction into a flock of a relatively large group of selected females from various top herds which has resulted in maximum heterosis and often a few very good looking progeny. But this is not research unless we are using it as a means of searching for genes which we can later systematically combine into a purified creation for production genes,--and that is a long story, but one that is fruitful of much research effort. Research must go beyond those empirical practices that are common commercial practices. Research always goes beyond the empirical in industry. If it does not, it is not research. Likewise, the person who is employed to do research in basic animal improvement must go beyond the orthodox. And he must constantly discipline himself to recognize unfruitful detours which are, no doubt, the most disturbing elements he has to encounter.

The period of change in which we now find ourselves is rushing in upon us with new accelerated demands. However, it is difficult to accelerate basic breeding work. It moves slowly. And this is a prime reason for avoiding detours,--for moving along paths of progress that can be charted with reasonable clarity with clear thinking and full use of basic biological and economic information.

PUBLICATIONS

The following papers have been published or mimeographed by the U. S. Sheep Experiment Station since 1937. The complete list is included again this year because the reports of the Western Sheep Breeding Laboratory and U. S. Sheep Experiment Station are presented separately this year. Publications which have also been contributed to by the Western Sheep Breeding Laboratory are starred. A number of contributions have been made to livestock journals and the general press that are not included in this series. They are for the most part adaptations of the regular series prepared for the lay reader.

1. Measurement of Reproductive Capacity as an Aid in Selection of rams of High Fertility (A Preliminary Report). C. E. Terrill, Proc. of the Amer. Soc. of An. Prod., 1937, pp. 311-316.

2. Artificial Insemination of Ewes. C. E. Terrill and E. M. Gildow, National Wool Grower 27(12):35, Dec., 1937.

3. Another Experiment on Long Range Paternity in Sheep. C. E. Terrill and E. M. Gildow, Jour. of Heredity 29(2):77-78, Feb. 1938.

4. Artificial Insemination of ewes with Transported Semen. E. M. Gildow and C. E. Terrill, Jour. of Amer. Vet. Med. Assoc. N. S. 46(3):157-159, Sept., 1938.

* 6. A Preliminary Study of the Relation Between Fleece Characteristics of Weanling and Yearling Range Sheep. W. V. Lambert, J. I. Hardy and R. G. Schott, Proc. of the Amer. Soc. of An. Prod., 1938, pp. 298-303.

* 7. Reproduction in Range Sheep. C. E. Terrill and John A. Stoehr, Proc. of the Amer. Soc. of An. Prod., 1939, pp. 369-375.

* 8. Selection of Range Rambouillet Ewes. C. E. Terrill, Proc. of the Amer. Soc. of An. Prod., 1939, pp. 333-340.

* 9. Comparison of the Accuracy of Two Methods of Estimating Fineness of Wool Fibers. Ralph W. Phillips, R. G. Schott, J. I. Hardy and H. W. Wolf, Jour. of Agr. Res. 60(5):343-350, Mar. 1, 1940.

10. A Summary of Three Year's Work in the Transportation of ram Semen for Artificial Insemination. Ralph W. Phillips, R. G. Schott, E. M. Gildow and C. E. Terrill. Proceedings of the Second National Meeting of Veterinary Surgeons of Italy, 1940. pp. 231-237.

* 11. The Western Sheep Breeding Laboratory and U. S. Sheep Experiment Station. Julius E. Nordby, Extension Animal Husbandman, Sept., 1940.

13. Some Factors Affecting the Progeny Testing of Rams. Ralph W. Phillips, R. G. Schott, W. V. Lambert and G. W. Brier, U.S.D.A. Cir. 580, 17 pp., Oct., 1940.

* 14. The Application of a Rapid Comparator Method for Determining Fineness and Variability in Wool. Elroy M. Pohle, Proc. of the Amer. Soc. of An. Prod., 1940, pp. 161-168.

15. Comparison of Ram Semen Collection Obtained by Three Different Methods for Artificial Insemination. Clair E. Terrill, Proc. Amer. Soc. of An. Prod., 1940 , pp. 201-207.

* 16. Growth in Corriedale and Rambouillet Sheep under Range Conditions. Ralph W. Phillips, John A. Stoehr and G. W. Brier, Proc. of the Amer. Soc. of An. Prod., 1940 pp. 173-181.

* 17. Sheep Improvement for Range Production. Julius E. Nordby, Idaho Forester 23, 1941, Forestry School, University of Idaho.

19. Columbia Sheep and Their Place in Range Sheep Production. Damon A. Spencer and John A. Stoehr, A.H.D. No. 42, Oct. 1941, 2 pp. (Processed).

20. Targhee Sheep and Their Place in Range Sheep Production. Damon A. Spencer and John A. Stoehr, A.H.D. No. 43, Oct., 1941, 2 pp. (Processed).

* 22. Wool Yield Determination in which Small Samples are Compared with Whole Fleeces. Ralph G. Schott, Elroy M. Pohle, Damon A. Spencer, and Glenn W. Brier, A.H.D. No. 50, Jan., 1942, 6 pp. (Processed).

* 23. Wool Yields in the Small Side-Sample as Related to Individual Whole-Fleece Yields in Form Breed-Groups of Sheep. Ralph G. Schott, Elroy M. Pohle, Damon A. Spencer and Glenn W. Brier, Jour. of An. Sci. 1(2):137-144, May 1942.

* 24. The Importance of Body Weight in Selection of Range Ewes. Clair E. Terrill and John A. Stoehr, Jour. of An. Sci. 1(3):221-228, Aug., 1942.

* 25. Relationship Between Weanling and Yearling Fleece Characters in Range Sheep, Elroy M. Pohle, Jour. of An. Sci. 1(3):229-235, Aug., 1942,

* 26. Staple Length in Relation to Wool Production. Elroy M. Pohle and Henry R. Keller, Jour. of An. Sci. 2(1):33-41, Feb., 1943.

* 28. Staple Length and Its Influence on Shrinkage and Fleece Values. Elroy M. Pohle, and Henry R. Keller, National Wool Grower 33(6): 22-24, June, 1943.

29. Stabilizing Wool and Body Type in White Faced Crossbred Sheep for Western Range Production. Julius E. Nordby, National Wool Grower 33(7):15-17, (8):16-18, July and August, 1943.

* 34. Estimation of Clean-Fleece Weight from Grease-Fleece Weight and Staple Length. Clair E. Terrill, Elroy M. Pohle, L. Otis Emik, and Lanoy N. Hazel, Jour. of Agr. Res. 70(1):1-10, Jan. 1, 1945.

* 35. Clean-Wool Yields in Small Samples from Eight Body Regions as Related to Whole-Fleece Yields in Four Breeds of Sheep. Elroy M. Pohle and L. N. Hazel, Jour. of An. Sci. 3(2):159-165, May, 1944.

* 36. Shrinkage and Value by Grades for 1943 Range Wool. Elroy M. Pohle and Henry R. Keller. National Wool Grower 34(6):22-23, June, 1944. (Published in other Wool Growers Magazines)

37. Some Factors Affecting the Blood Phosphorus Level of Range Ewes. W. M. Beeson, Clair E. Terrill and D. W. Bolin, Jour. of An. Sci. 3(2):175-182, May, 1944.

38. The Accuracy of Measurements and Weights of Sheep. Ralph W. Phillips and John A. Stoehr, Jour. of An. Sci. 4(3):311-316, Aug., 1945.

* 39. Monthly Changes in Fineness, Variability and Medullation in Hairy Lambs. Elroy M. Pohle, H. R. Keller and L. N. Hazel, Jour. of An. Sci. 4(1):37-46, Feb., 1945.

* 41. The Influence of Location and Size of Sample in Predicting Whole-Fleece Clean Yields. E. M. Pohle, L. N. Hazel and H. R. Keller, Jour. of An. Sci. 4(2):104-112, May, 1945.

* 42. Wool Off-Sorts, Percentage, Shrink, Value. Elroy M. Pohle and Henry R. Keller, Montana Wool Grower 18(6):7, June, 1944. (Published in Other Wool Growers Magazines)

* 44. Looking Forward, The Stabilizing Influence of Research in a Changing Sheep Production Economy. Julius E. Nordby, National Wool Grower 35(6):18-19, 35-36, June, 1945.

51. Effects of Some Environmental Factors on Weanling Traits of Range Columbia, Corriedale and Targhee Lambs. L. N. Hazel and Clair E. Terrill, to appear in the Journal of Animal Science.

52. Heritability of Weanling Traits in Range Columbia, Corriedale and Targhee Lambs. L. N. Hazel and Clair E. Terrill, to appear in the Journal of Animal Science.

* 54. Length of Gestation in Range Sheep. Clair E. Terrill and L. N. Hazel, submitted to the American Journal of Veterinary Research.

56. Some Breed Crosses Used in the Development of Targhee Sheep. Clair E. Terrill, submitted to the Journal of Animal Science.

ABSTRACTS

The following abstracts have been published by the U. S. Sheep Experiment Station since 1937. Those which have also been contributed to by the Western Sheep Breeding Laboratory are starred. These abstracts are in general of work that has been or will be published and listed in the regular series of publications.

* 1. Relationship Between Weanling and Yearling Fleece Characters in Range Sheep. Elroy M. Pohle, Jour. of An. Sci. 1(1):60, Feb., 1942.

* 2. The Importance of Body Weight in Selection of Range Ewes. Clair E. Terrill and John A. Stoehr, Jour. of An. Sci. 1(1):60-61, Feb., 1942.

* 5. Estimation of Clean Fleece Weight from Unscoured Fleece Weight and Staple Length. Clair E. Terrill, Elroy M. Pohle and L. Otis Emik, Jour. of An. Sci. 1(4):357, Nov., 1942.

8. The Effect of Some Factors on the Blood Phosphorus Level of Range Ewes. W. M. Beeson, Clair E. Terrill and D. W. Bolin, Jour. of An. Sci. 2(4):369, Nov., 1943.

* 9. Clean Wool Yields in Small Samples from Eight Body Regions as Related to Whole-Fleece Yields in Four Breeds of Sheep. Elroy M. Pohle and L. N. Hazel, Jour. of An. Sci. 2(4):370, Nov., 1943.

* 12. The Gestation Period of Range Sheep. Clair E. Terrill, Jour. of An. Sci. 3(4):434-435, Nov., 1944.

* 13. The Influence of Location and Size of Sample in Predicting Whole-Fleece Clean Yield. Elroy M. Pohle and L. N. Hazel, Jour. of An. Sci. 3(4):452, Nov., 1944.

PROGRESS IN DEVELOPING LINES OF COLUMBIA AND TARGHEE SHEEP

Matings of Columbias were continued in 10 lines and 4 test pens in the fall of 1945. The total number of ewes bred increased from 599 in 1944 to 632 in 1945. Of these 70 were mated in test pens and 114 in line crosses leaving a total of 448 ewes for the 10 inbred lines. Some data on the Columbia lines and test pens are presented in the accompanying table.

The average inbreeding coefficient of Columbia dams from inbred lines increased from 5.19 percent in 1944-45 to 5.96 percent in 1945-46. The average age of ewes in lines decreased slightly while the age of the test ewes increased.

The eight regular lines of Targhees were continued in the fall of 1945 as shown in the accompanying table. The number of Targhee ewes in lines decreased slightly from 1944 and the average age of the ewes increased to 4.36 years. The average inbreeding coefficient of the dams increased from 5.09 percent in 1944-45 to 7.22 percent in 1945-46.

The formation of 4 new Targhee lines was initiated in 1945. Ewes from the 4 Corriedale lines 1-, 2- (formerly 5-), 3-, and 4- were mated with rams from Rambouillet lines 20, 40, 53, and 54, respectively. The first-cross offspring from each pair of lines will be interbred and continued as a Targhee line.

Six test pens were used for Targhees in 1945-46. The ewes were chiefly first-cross Targhee ewes produced from mating Columbia rams to Rambouillet ewes. Additional matings were made of 10 Columbia rams to 100 Rambouillet ewes. These matings served the dual purpose of producing additional first-cross Targhees and of testing the Columbia rams for the recessive gene for horns.

The use of Merino blood in improving Targhees is being tested in a preliminary way this year. A New Zealand Merino ram with a long Staple, 1/2 Blood fleece is being mated to Columbia and Targhee crossbred ewes.

SUMMARY OF EWES IN COLUMBIA BREEDING PENS
1945-46 Breeding Season

Pen no.	Ram no.	Kind of mating	No. of head	Face cov. score	Type score	Yearling body wt. (lbs.)	Yearling adj. fleece weight (lbs.)	Yearling adj. fleece length (cms.)	Inbreeding coefficient dams (%)	Age of ewes at lambing (years)
1	4306K	Line	23	2.38	2.01	96.52	10.09	9.49	8.57	3.91
		Line crosses	29	2.31	1.85	101.93	10.66	9.92	4.74	3.86
1	4800K	Line	23	2.33	1.88	98.74	9.96	9.47	8.83	4.22
		Line crosses	9	2.15	1.74	99.00	9.84	9.32	6.10	4.67
2	3719K	Line	28	2.08	1.95	97.21	9.92	9.53	12.30	4.36
3	4519K	Line	44	2.40	1.80	97.91	10.65	9.84	7.06	3.57
4	4640K	Line	34	2.39	2.08	95.50	10.36	10.25	3.08	3.56
5	4048K	Line	30	2.31	1.92	98.17	9.87	10.03	4.35	3.90
		Line crosses	31	2.41	1.86	100.45	10.30	9.72	5.91	3.87
5	4309K	Line	31	2.28	1.89	99.00	9.65	9.32	6.59	3.87
		Line crosses	8	2.21	2.12	97.25	10.44	10.55	8.31	4.25
6	4745K	Line	42	2.28	1.89	98.55	10.22	9.03	5.14	4.62
7	3633K	Line	29	2.64	1.90	95.79	10.21	9.13	6.12	2.93
		Line crosses	20	2.52	2.07	95.55	10.39	10.48	7.68	2.09
8	4265K	Line	28	2.36	1.86	97.96	9.91	8.69	5.53	4.11
		Line crosses	17	2.45	2.12	92.82	10.13	10.33	7.26	2.00
8	4953K	Line	48	2.52	2.06	95.38	10.00	9.18	3.48	3.64
9	4615K	Line	45	2.36	1.83	97.96	9.99	9.15	5.49	4.16
10	4623K	Line	43	2.39	2.09	92.70	9.77	8.69	3.97	4.19
Average for lines			562	2.37	1.93	98.01	10.12	9.02	5.96	3.78
11	5355K	Test	17	2.61	2.02	92.35	9.00	9.05	0	5.76
12	5388K	Test	18	2.46	2.00	94.50	10.02	9.24	0.43	6.28
13	4821K	Test	18	2.50	1.87	99.94	10.09	9.15	0.74	5.44
14	5274K	Test	17	2.53	1.92	97.00	10.06	9.49	0	5.47
Average for test pens			70	2.52	1.95	95.99	9.79	9.23	0.30	5.74

SUMMARY OF EWES IN TARGHEE BREEDING PENS
1945-46 Breeding Season

Pen no.	Ram no.	Series of ewe	No. ewes	Face cov. (score)	Type (score)	Yearling body wt. (lbs.)	Yearling adj. fleece weight (lbs.)	Yearling adj. fleece length (cms.)	Inbreeding coefficient dams (%)	Inbreeding coefficient offspring (%)	Age of ewes at lambing (years)
1T	1934T	T	25	3.44	1.88	93.12	9.24	7.38	11.19	18.90	4.52
2T	2211T	T	25	3.41	1.93	85.36	8.90	8.38	11.78	10.24	5.20
3T	2767T	T	32	3.58	2.04	88.84	9.40	7.64	8.36	8.18	3.62
4T	2082T	T	43	3.22	2.00	87.72	8.99	8.19	1.57	10.70	4.14
5T	2783T	T	29	3.62	2.12	85.17	8.92	8.22	12.18	11.36	4.31
6T	2765T	T	39	3.50	1.97	89.82	9.66	8.60	4.71	13.13	4.31
7T	2862T	T	23	3.35	2.17	86.04	9.20	8.07	11.72	---	4.56
8T	2634T	T	29	3.59	2.07	89.76	9.58	8.29	6.01	8.96	4.62
Average for lines			245	3.46	2.02	88.29	9.25	8.12	7.22	11.49	4.36
1-	1198RW	A	24	2.90	2.07	88.38	9.62	9.43	8.75	0	4.29
2-	6752W	A	25	2.92	2.03	83.96	8.79	9.56	5.22	0	4.16
3-	5090W	A	26	2.91	2.36	83.27	10.03	10.20	6.58	0	4.54
4-	6328W	A	28	2.76	2.24	82.71	9.65	9.53	7.54	0	4.78
Average for RxA lines			103	2.87	2.18	84.48	9.53	9.68	7.02	0	4.46
9T	2254T	T_1	18	3.65	1.89	93.17	9.71	8.05	0		2.94
5-	2401T	T, T_1	19	3.32	1.88	92.68	9.40	8.46	0.29		2.63
6-	2831T	T, T_1	19	3.39	1.98	90.16	9.28	8.39	0.15		2.63
7-	2699T	T, T_1	18	3.46	1.93	89.61	9.14	7.90	0.07		2.83
8-	2128T	T, T_1	18	3.30	1.96	90.78	9.58	8.40	0.03		2.61
9-	2799T	T, T_1	18	3.48	1.82	92.17	9.05	7.86	0.08		2.78
Average for test pens			110	3.43	1.91	91.43	9.36	8.18	0.11		2.74
70	4800K	S	10	4.47	2.03	86.20	8.43	6.58	1.81	0	4.10
71	4640K	S	11	4.42	1.97	89.55	8.97	6.86	0.65	0	4.09
72	4745K	S	10	4.50	2.00	87.20	8.38	6.71	0.04	0	4.50
73	4615K	S	10	4.83	2.23	84.70	8.65	6.90	0.43	0	3.90
74	4623K	S	10	4.87	2.00	83.30	8.75	7.08	0.91	0	3.70
75	4309K	S	10	4.40	2.26	91.90	8.75	6.93	0.35	0	4.60
81	5355K	S	10	4.33	2.23	87.10	8.64	6.68	0.42	0	4.20
82	5388K	S	9	4.33	2.26	85.11	8.42	6.57	1.04	0	4.22
83	4821K	S	10	4.73	2.30	88.60	8.57	6.66	1.22	0	4.70
84	5274K	S	10	4.77	2.30	85.80	8.33	6.68	0.56	0	4.40
Ave. for KxR Pens			100	4.57	2.16	86.99	8.59	6.77	0.74	0	4.24

LINE CROSSES IN COLUMBIAS

Studies of the advantages of lambs from line crosses over those from inbred lines were continued during the year. Lamb production data for the inbred lines used for crossing in 1944 and 1945 are summarized in the following table.

	No. of ewes bred	Percent of ewes pregnant	Percent of lambs born of ewes lambing	Percent of lambs born alive of ewes lambing	Percent of lambs weaned of ewes bred	Average weaning weight	Pounds of lamb weaned per ewe bred
Inbred lines	417	92.54	126.61	117.20	83.21	74.73	62.18
Cross lines	236	88.79	126.70	119.90	88.14	78.13	68.86

The reason for the higher percent of ewes pregnant for inbred lines is unknown as the same rams were used in 4 of the 8 pens and the difference is even wider if only those 4 pens are considered. The crossline lambs were more viable at birth as evidenced by the higher percent of lambs born alive. This advantage in viability of the crossline lambs was more noticeable at weaning age as 5 percent more crossline lambs were weaned. The cross line lambs weighed over 3 pounds more on the average than those from inbred lines and the advantage of the crosslines in pounds of lamb weaned per ewe bred was 6.68 pounds.

SELECTION PRACTICED WITH COLUMBIA AND TARGHEE WEANLING LAMBS

Advantage of the selected lambs in the following table represents the difference between their average and the average for the entire group after corrections for environmental influences have been made. The percent of ram lambs saved was 67 and 36 for Columbias and Targhees respectively. The percent of ewe lambs saved was 59 and 69 for Columbias and Targhees respectively.

The relative emphasis each trait received in selection was determined by dividing the selection differential by the standard deviation. Again, type and condition scores received greatest emphasis with the exception of staple length in Targhee ewe lambs and face covering score in Columbia ram lambs. In general neck folds received the least emphasis. In general the selection differentials were greater than last year, but the proportions saved were lower.

SELECTION DIFFERENTIALS FOR COLUMBIA AND TARGHEE WEANLING LAMBS IN 1945

		Staple length (cm.)	Weaning weight (lbs.)	Type score	Condition score	Face covering score	Neck folds score
	Advantage of selected lambs	.09	4.23	.30	.24	.21	.02
Rams							
	Relative emphasis	.11	.36	.68	.47	.50	.07
Columbia							
	Advantage of selected lambs	.06	1.84	.11	.15	.11	.05
Ewes							
	Relative emphasis	.08	.16	.25	.29	.26	.17
	Advantage of selected lambs	.09	3.10	.23	.24	.26	.07
Rams							
	Relative emphasis	.20	.31	.50	.47	.44	.15
Targhee							
	Advantage of selected lambs	.16	1.12	.13	.06	.03	.05
Ewes							
	Relative emphasis	.36	.11	.28	.12	.05	.11

HERITABILITY OF WEANLING TRAITS IN RANGE COLUMBIA, CORRIEDALE AND TARGHEE LAMBS

Estimates of heritability of weanling staple length, body weight, type, condition, face covering and neck folds were obtained from 820 Columbia, 316 Corriedale and 575 Targhee lambs born from 1941 to 1944. Estimates were made from half-sib correlations and regressions of offspring on dam after yearly differences were removed and adjustments had been made for environmental effects.

Estimates were not consistently higher or lower with either method of estimation or for a particular breed, but some traits were definitely more highly hereditary than others. The average estimates of heritability and their standard errors were: weaning weight, 0.17 ± 0.05; length of staple, 0.43 ± 0.06; body type 0.07 ± 0.04; condition 0.21 ± 0.05; face covering 0.46 ± 0.06; and neck folds 0.08 ± 0.04.

An increase in the incidence and size of neck folds in different breeds was found to be accompanied by an increase in variability and heritability which was consistent with genetic theory.

The results indicate that face covering and staple length can be changed most rapidly by selection, followed by condition and weaning weight. Further progress toward complete elimination of neck folds will be slow but these breeds are already practically free from folds. Even the most intense selection that can be practiced and the most efficient breeding systems which can be used with sheep will not be sufficient to induce marked improvement in body type because of its low heritability.

INCREASING ACCURACY OF SELECTION ON YEARLING TRAITS OF COLUMBIA AND TARGHEE EWES

The effect of age of dam, type of birth, year of birth, and age at shearing on staple length, grease fleece weight, body weight, type, condition, face covering and neck folds were studied on 406 Columbia and 290 Targhee yearling ewes born during the years from 1941 to 1944.

The effect of the environmental factors was greatest on fleece weight and body weight and least on face covering and neck folds. Year of birth was the most important environmental source of variation followed by type of birth, age at shearing, and percent inbreeding. Age of dam was the least important source of variation of Columbia and Targhee yearling traits.

Single ewes had heavier bodies and fleeces, longer staple and better type and condition than twins. Daughters of mature dams had heavier fleeces and bodies than those of 2-year old dams. Fleece and body weights, staple length, type and condition improved with age at shearing.

Accuracy of selection on yearling traits in Columbia and Targhee ewes may be increased by adjusting for certain environmental factors. It seems most reasonable to adjust body weight and grease fleece weight for years, type of birth, age of dam, and age at shearing. Body type should be adjusted for years, type of birth and age at shearing. Staple length should be adjusted for years and type of birth. Condition and neck folds should be adjusted for years. Little can be gained by adjusting face covering for any of the factors studied.

EFFECT OF INBREEDING ON COLUMBIA AND TARGHEE YEARLING EWES

The effect of inbreeding on staple length, grease fleece weight, body weight, body type, condition, face covering and neck folds was studied on 406 Columbia and 290 Targhee yearling ewes born during the years from 1941 to 1944. The change in each trait with each increase of 1 percent in inbreeding is shown in the following table.

Breed	Staple length (centimeters)	Grease fleece weight (pounds)	Body weight (pounds)	Body type (score)	Condition (score)	Face covering (score)	Neck folds (score)
Columbia	-.007	-.022*	-.055	.002	.002	-.004	.0002
Targhee	-.006	-.032**	-.387**	.011**	.006**	.002	.001

* Signifies probability of chance occurrence $< .05$
** Signifies probability of chance occurrence $< .01$

The effect of inbreeding was most important on body weight and grease fleece weight each of which decreased with increased inbreeding. Type and condition scores became poorer with inbreeding. Staple length decreased slightly with inbreeding but the effect was not significant in either breed. Inbreeding did not have a significant effect on face covering or neck folds. In general inbreeding had greater effect on Targhee than on Columbia traits.

SOME BREED CROSSES USED IN THE DEVELOPMENT OF TARGHEE SHEEP

Data on weaning weight, staple length, type, condition, face covering and neck folds were studied on 599 Targhee lambs and 415 breed cross lambs at the U. S. Sheep Experiment Station, Dubois, Idaho. Also data on yearling grease fleece weight, staple length, body weight, type, condition, face covering and neck folds were studied on 439 Targhee ewes and 262 breed cross ewes. In addition, available data from some of these ewes on clean yield, clean fleece weight and commercial grade of fleece were examined. Breed crosses were compared with Targhees to determine their suitability for foundation Targhee breeding.

Columbia X Rambouillet ewes excelled in body weight, type, condition, fleece weight, and open face but were deficient in staple length and freedom from neck folds. Rambouillet X Corriedale ewes excelled in staple length, yearling weight, fleece weight, and freedom from folds, but were deficient in type, condition and face covering. Both of these crosses produced grades of fleeces which were fairly typical of Targhees. These crosses complement each other in that one is strong in the traits in which the other is weak.

Crosses of Targhee rams on Corriedale and Lincoln-Rambouillet ewes produced ewes which were equal to or better than Targhees in most traits. These crosses produced exceptional length of staple but more of their fleeces were classified in coarser grades than were fleeces of Targhees.

The cross of Targhee rams on Rambouillet ewes was least satisfactory for production of Targhees. This cross was inferior to Targhees in every trait at weaning. Yearling body weight, type and condition were better than Targhees, although the shorter staple, more covered faces, and greater degree of neck folds persisted. The yearling fleeces graded definitely finer than Targhees.

REPRODUCTIVE CAPACITY OF COLUMBIA AND TARGHEE RAMS

Semen tests were made on all Columbia and Targhee rams used for breeding in 1945. A total of 126 ejaculates were examined from 49 rams. Ten rams were rejected because of poor quality semen. The semen from the remaining rams appeared to be average or above in quality. All rams used in breeding pens appeared to be of satisfactory fertility.

In 1945, 8 rams (including 4 Rambouillet) which refused to serve were tested by means of electrical stimulation of ejaculation. Half of these had good semen and were used in breeding pens with satisfactory results.

OCCURRENCE OF BROWN COLOR IN COLUMBIAS AND TARGHEES

Brown or black color, usually on the legs but sometimes on the face occurs on a small proportion of Columbias and Targhee lambs each year. While the number of lambs carrying color is small the trait does assume considerable importance if all of these lambs are culled because they have color. Therefore the heritability of color is being investigated to determine the most efficient method of selecting against it.

Color of the hair on the face and legs is scored at weaning time on all lambs as follows: "1" white with no colored spots on fibers, "2" slightly colored with a few brown or black spots or fibers, "3" a medium degree of color on face or legs, "4" considerable color on face or legs, "5" face or legs completely colored or covered with colored spots.

The proportion of Columbia and Targhee lambs at weaning time with color on the face or legs has varied from about 6 to 26 percent with an average of about 17 percent for the last 8 years. Considerable yearly variation was observed. There does not appear to be any sex difference in the occurrence of color.

Estimates of heritability of color from half-sib correlations vary from 5 to 38 percent with the mean falling in the range of 10 to 20 percent. These estimates are based on about 2200 offspring over a 4 year period. Estimates based on differences resulting from selection varied from 5 to 15 percent. The heritability appeared to increase slightly as the amount of color on the dam increased. Practically all of the sires used had no color. It appears that the heritability of color is sufficiently low that progress from selection will be slow.

The color scores of offspring from dams with color were tabulated for all Columbia and Targhee ewes in the flock. The elimination of all of these ewes from the flock would have increased the percent of lambs without color from 86.8 to 87.0 percent in the Columbias and from 78.5 to 79.7 percent in the Targhees. It is apparent that it is not practical to cull all ewes with color.

A tentative plan for selection against color, based on these preliminary studies would include selection against color in rams. All ram lambs having color should be culled. The progeny test should be used wherever possible to eliminate rams which sire an abnormal high proportion of lambs with color. Inbreeding should make selection against color more effective. Color might be disregarded in the selection of ewe lambs. Further studies are being made on the usefulness of pedigree and progeny performance in selecting for absence of color in ewes.

CLEAN WOOL YIELD DETERMINATIONS

A total of 386 wool samples for 1945 were scoured at the wool laboratory, Beltsville, Maryland because wool technologists were not available at Dubois. Percentage clean yield in the small side sample was used in determining the total amount of clean wool in each fleece.

Clean fleece weights of yearling ewes were estimated from grease fleece weights and staple lengths.

WOOL QUALITY

Wool samples were taken from the mid-side, mid-back and over the hip joint for blending, and also from the thigh of all Targhee, Corriedale and Columbia yearling ewes and all yearling and mature rams for the determination of fineness, uniformity and medullation. Approximately 500 determinations have been made since wool technologists have returned from military service. There remains a back log of approximately 14,000 more determinations to accomplish before all of the past war years samples will be complete.

WOOL FILM STRIP REVISED

The first 35 mm. film strip of wool standards developed at this Laboratory in 1939-40, for use in estimating wool fineness and variability by the rapid comparator method has been revised. The new revised strip was accomplished in May 1946 and is quite an improvement for many of the examples over the first strip developed, as to distinctness, clarity and usability. These film strips are printed on 35 mm. double perforated positive film and are about 5 feet long. The standards cover the complete range for domestic wool grades (80's-36's) and fineness readings are made in microns from the projected strip so they may easily be converted to the English spinning count or a numerical grading system.

It is necessary to have a satisfactory 35 mm. projector, and a microscopic set-up or a microprojector to cast the image of the unknown sample in question that has been cut in a cross-section device, to a magnification of 500 diameters. The method is described in U.S.D.A. Circular 704, "Sampling and measuring methods for determining fineness and uniformity in wool". The new revised film strips are available upon request by the collaborating stations in exchange for strips they now have.

BLENDING SAMPLES OF WOOL

In recent tests on blending small staples of wool by hand carding it was found that after 10 strokes of the cards the mixture was definitely non-random. It seemed probable that a random mixture could be achieved frequently after 20 strokes but with reasonable certainty only after 30 strokes. The new data on these tests will be presented in the revised circular 704. Revision of this circular is going forward at this time.

WOOL PRODUCTION YEARLING EWES

The Targhee, Corriedale and Columbia yearling ewe fleece analysis for 1945 are shown in the accompanying table. The average grease fleece weight of 9.58 pounds for the Targhees was higher in 1945 than for any of the 4 preceding years while the commercial clean fleece weight of 4.33 pounds was the same as for 1942. The 1945 commercial clean yield was 8 percent lower than for the year 1942 when it was 54.45 percent and highest. The staple length has been increasing annually and in 1945 it was 3.26 inches which is sufficient length for a good quality 1/2 Blood fleece. A good quality, half blood fleece is the aim for development in this breed.

The Yearling Corriedale ewes sheared 10.14 pounds of grease wool which was over 1/2 pound heavier than for any of the 4 preceding years. Their 1945 clean fleece weight of 5.09 pounds was heavier than for any other year and their staple length of 3.96 inches was also longest. This long staple length measurement is well over the requirements for 3/8 and 1/4 Blood wool which are the predominating grades produced by the yearling ewes at this Station.

The 1945 Columbia Yearling ewes average grease fleece weight of 10.47 pounds was .2 pound lighter than in 1941 when they averaged heaviest but the 5.2 pounds of clean wool was 1/2 pound higher than for any other year. The staple length average of 3.96 inches was .21 inches longer than the next longest year, 1942. Fleeces from this breed grade mostly 3/8 and 1/4 Blood and the average staple length measurements are well over requirements for these grades of wool.

SUMMARY OF WOOL PRODUCTION FOR 1945 AND FOUR PRECEDING YEARS FOR TARGHEE, CORRIEDALE AND COLUMBIA YEARLING EWES
(adjusted to 365 days growth)

Years	1945	1944	1943	1942	1941
Fleece Characters	Mean	Mean	Mean	Mean	Mean
TARGHEE					
Fleece weight (grease) lbs.	9.58	8.53	8.15	7.96	9.39
Fleece weight (clean, bone dry) lbs.	3.81*	3.42*	3.50*	3.81	3.59
Commercial for breed	4.33	3.89	3.98	4.33	4.08
Clean yield (bone dry) %	39.77	40.09	43.10	47.92	38.19
Commercial for breed	45.19	45.56	48.98	54.45	43.40
Staple length (cm.)	8.28	7.86	8.11	8.10	7.50
Staple length (inches)	3.26	3.09	3.19	3.19	2.95
CORRIEDALE					
Fleece weight (grease) lbs.	10.14	8.44	8.54	7.88	9.53
Fleece weight (clean, bone dry) lbs.	4.48*	4.16*	3.86*	3.93	4.01
Commercial for breed	5.09	4.73	4.39	4.47	4.56
Clean yield (bone dry) %	44.18	42.29	44.03	49.90	42.07
Commercial for breed	50.20	56.04	50.03	56.70	47.81
Staple length (cm.)	10.17	9.59	9.85	10.10	8.98
Staple length (inches)	4.00	3.78	3.88	3.98	3.54
COLUMBIA					
Fleece weight (grease) lbs.	10.47	9.51	9.06	8.87	10.67
Fleece weight (clean, bone dry) lbs.	4.58*	4.06*	3.94*	4.13	4.10
Commercial for breed	5.20	4.61	4.48	4.69	4.66
Clean yield (bone dry) %	43.74	42.69	43.29	46.51	38.46
Commercial for breed	49.70	48.47	49.19	52.85	43.70
Staple length (cm.)	10.06	9.31	9.48	9.53	8.29
Staple length (inches)	3.96	3.67	3.73	3.75	3.26

* Estimated from nomograph by use of grease fleece weight and staple length.

PERCENT OF FLEECES IN EACH GRADE BY BREED — 1942-1945

		YEARLING				MATURE				
Breed	Sex	S	1/2	3/8	1/4	Fr.	S	1/2	3/8	1/4
TARGHEE	Rams	8	78	14			2	88	8	2
	Ewes	7	79	14		2	11	79	7	1
CORRIEDALE	Rams	1	10	74	15			6	81	13
	Ewes	1	8	77	14		1	25	64	10
COLUMBIA	Rams		6	60	34			2	58	40
	Ewes		5	66	29			6	53	41

1945 WOOL PRODUCTION BY GRADE AND BREED

Data in the following table shows fleece results on all ewes retained in the flock until shearing. The Targhee ewes producing Fine French and 1/4 Blood fleeces were eliminated from the breeding flocks. They were retained as lambs and grown out as yearlings to determine development of certain crosses in the breeding of Targhee sheep.

In the mature Targhee ewes it will be noticed that 75% of the fleeces graded 1/2 Blood with approximately 10% grading Fine Staple and 10% 3/8 Blood. Four percent was French Combing which can be traced to older ewes that have passed their more productive years. Targhee ewes at this Station are producing from 4.6 pounds of clean wool up to 6.7 pounds with an average for all mature ewes of 5.5 pounds.

The Corriedale ewe fleeces graded predominately 3/8 Blood with some 1/2 and 1/4 Blood. It is readily seen from the table that the coarser the grade of wool the heavier is the production. The ewes averaged 11.1 pounds of grease wool and 5.9 pound of clean wool.

The Columbia yearling ewe fleeces graded 59% 3/8 Blood, 39% 1/4 Blood and 4% 1/2 Blood while the mature ewes graded approximately 50-50 3/8 and 1/4 Blood respectively, with a few 1/2 Bloods. The yearling ewe clean fleece average was 6.1 pounds which was highest of the three breeds. The mature ewes average grease fleece weight of 12.4 pounds and their clean fleece weight of 6.7 pounds was far superior to any of the other breeds.

1945 WOOL PRODUCTION BY GRADE AND BREED BASED ON COMMERCIAL RESULTS*

Grade	YEARLINGS Number of fleeces	YEARLINGS Percent of Total	YEARLINGS Grease fleece weight	YEARLINGS Clean fleece weight	MATURE Number of fleeces	MATURE Percent of total	MATURE Grease fleece weight	MATURE Clean fleece weight
TARGGEE EWES								
Fine French	2	1	9.0	4.0	12	4	10.1	4.6
Fine Staple	46	22	9.7	4.4	33	11	10.3	5.1
1/2 Blood	144	68	10.6	5.1	226	75	10.8	5.5
3/8 Blood	18	9	11.3	5.9	30	10	12.4	6.7
1/4 Blood	1	.5	12.1	6.4	--	--	--	--
Average	211		10.5	5.0	301		10.9	5.5
CORRIEDALE EWES								
Fine Staple	--	--	--	--	2	2	10.3	5.0
1/2 Blood	2	6	9.5	4.5	14	15	10.3	5.3
3/8 Blood	26	76	11.4	5.9	68	72	11.1	5.9
1/4 Blood	6	18	11.3	6.0	10	11	12.6	6.9
Average	34		11.3	5.9	94		11.1	5.9
COLUMBIA EWES								
1/2 Blood	8	4	10.6	5.1	18	3	11.3	5.8
3/8 Blood	118	57	11.3	5.9	275	48	11.9	6.4
1/4 Blood	81	39	12.6	6.7	277	49	12.9	7.1
Average	207		11.8	6.1	570		12.4	6.7

* All weights include crutchings and tags. The yearling ewes were not crutched in 1945.

SHRINKAGE AND APPRAISAL OF 1945 GRADED CLIP

As each fleece was graded it was put into its respective bin for sacking. Each fleece was sacked according to grade and sex. Each grade lot was scoured individually and an individual shrinkage and appraisal value reported on each lot. There were 13 main lots for the ewes and rams and 4 miscellaneous lots. All lots except the 1/4 Blood were sorted into a No. 1 main sort, a burry sort, paint sort and low-stained or grey sort. The percentage of the main sort to the total wool in the entire lot ranged from 90% in the Fine Ram wool to 74% in the 3/8 Blood Yearling ewes. The mature and yearling ram wool was made into one lot for each grade. Since this wool is very similar in quality and shrinkage and in order to cooperate with the mills desire they were combined because the lots were small and the commercial scouring plants do not care to handle any smaller lots than is practical for their operations.

The 1/4 Blood lots were not sorted because the sorting foreman stated that due to the high quality and great uniformity, there would be but a very small portion of offs and it would not raise the sale value of the wool enough to be worthwhile. The mill was very crowded for space and time so it was agreed to be satisfactory but as it becomes possible to have complete sorting accomplished this will give more thorough information on the entire clip and conform to the Bureau's desire.

It will be noted in several cases that the burry sort had a higher yield than the main sort, but this was not true for the majority of the lots. Perhaps the higher yield in the burry sort may be attributed to a certain portion of the dirt sifting out when the sorters pulled the burry wool from the main sort. In every case, however, the clean scoured wool in the main sort was appraised 4 to 10 cents higher per clean pound than was the burry. The burry sort made up but a small portion of the total, however.

The 1/2 Blood mature ewe wool had the highest net grease value for all grades, followed by 3/8 Blood and Fine Staple Combing. The increased yield in the 1/2 Blood lot and only a one cent lower appraisal value than for the Fine Staple is what brought the grease price above the Fine. Great emphasis should be placed on the amount of clean wool in fleeces of breeding sheep because it is not always the sheep that produce the heaviest grease fleeces that are the most productive in dollars and cents, although heavy grease fleeces are good indicators.

The cost of marketing, processing, service and appraisal on the 1945 clip was as follows: The freight charge was 2.38 cents per pound and a handling charge of 1.97 cents per pound or a total charge of 4.35 cents per grease pound for freight and handling. The sorting charges amounted to 1.75 cent per pound and the scouring charges of 3.54 cents per pound making a total of 5.29 cents per grease

CLEAN YIELD AND APPRAISAL VALUES ON GRADED AND SORTED CLIP FOR 1945

Grade Lot	W.F.A. APPRAISAL VALUE ON SORTED & SCOURED BASIS					
	Main Sort*		Net grease value f.o.b. Dubois	Burry Sort		Net grease value f.o.b. Dubois
	Clean yield (%)	Value		Clean yield (%)	Value	
MATURE EWES						
Fine French Combing	45.81	$1.24	$0.52	46.34	$1.16	$0.49
Fine Staple Combing	50.56	1.26	.59	46.31	1.20	.51
1/2 Blood Combing	52.94	1.25	.62	48.54	1.17	.52
3/8 Blood Combing	55.30	1.16	.60	53.31	1.10	.54
1/4 Blood Combing	55.45	1.05	.54	not sorted		
YEARLING EWES						
Fine Staple Combing	46.91	1.25	.54	42.92	1.19	.47
1/2 Blood Combing	47.48	1.25	.55	49.73	1.20	.55
3/8 Blood Combing	54.41	1.16	.59	49.08	1.09	.49
1/4 Blood Combing	53.12	1.02	.50	not sorted		
RAMS -- MATURE AND YEARLING						
Fine Staple Combing	44.54	1.25	.51	41.06	1.21	.45
1/2 Blood Combing	45.54	1.25	.53	41.88	1.15	.44
3/8 Blood Combing	48.81	1.16	.52	56.09	1.08	.56
1/4 Blood Combing	50.59	1.03	.48	not sorted		
MISCELLANEOUS LOTS						
Fine Wool Crutchings	41.68	1.07	.40			
Cross-bred Crutchings	47.79	.98	.42			
Grading Locks & Tags	36.05	1.00	.32			
Black, Brown and Gray	45.02	.84	.33			

* The paint, low and stained sorts were averaged with the main sort in determining clean yield and price. However these sorts made up but a small portion of the total.

pound for processing. Service and appraisal charges by the CCC were 1.30 cent per grease pound, plus 1% of the scoured clean price, or 0.54 cent per grease pound or a total of 1.84 cents per pound for service and appraisal. This makes a total charge of 11.48 cents per grease pound for marketing, processing, service and appraisal.

RELIABLE SHRINKAGE IMPORTANT

The so-called pioneering work accomplished by the BAI in the past relative to wool shrinkage as it relates to price and not returns to the producer or rancher has set the stage for greater studies in determining shrinkage of ranch wools. The first domestic bagged wools that were cored by the old Agricultural Marketing Administration were produced, graded and bagged at the Western Sheep Breeding Laboratory and U. S. Sheep Experiment Station. Through a cooperative wool shrinkage program with this organization the wools were cored, shrinkage determined and the BAI went ahead and had each grade and lot of wool scoured in its entirety and the results of each method were compared. Since 1941 when the first coring work was done the method has been improved to the point where a very reliable shrinkage figure is arrived at with an accuracy of a plus or minus 1%. This, when compared to the visual estimates placed on wools by an appraisal committee shows that core samples from bags gives a much more accurate figure than the visual means of determining values. The coring work has progressed to the point where the Commodity Credit Corporation accepts the results from core samples as being the shrinkage upon which they rely for all re-appraisals.

Through cooperative wool shrinkage studies and core testing of Bureau wools and also from some state experiment stations who are cooperating on this work with the Production and Marketing Administration (old AMS) certain states have pointed out where their producers are realizing upwards of a million and a half dollars in increased returns per year. This has come about by proof of actual shrinkages where wools had been pegged for certain localities of far too high a shrinkage percentage in years past.

LOSS IN WEIGHT FROM DUBOIS TO CAMDEN AFTER STORAGE

The Dubois 1945 wool clip, consisting of 157 bags and a total weight of 47,585 pounds at shearing time were loaded on June 13 and shipped via rail to Camden, New Jersey. The shipment arrived in Camden on June 25 at which time each bag was weighed out of the car. The shearing floor weights and Camden weights were compared, bag for bag, and found that 36 bags weighed the same each time, 47 gained an average of 2.1 pounds per bag and 74 lost an average of 1.7 pounds. The net loss for all 157 bags averaged 0.1656 pound per bag or 0.05 percent of the total weight at shearing time.

The entire clip was stored at Camden, New Jersey from June 25. to November 6 until it was sorted and scoured by grade. As the wool

came up for sorting, each bag was weighed. A comparison of 127 bags containing the 10 main lots was made between the Dubois shearing weights and the November 6 weights after it had been stored on the East coast for about 4 months. Five bags weighed the same as at shearing time, one had gained 2 pounds and the other 121 bags lost an average of 6.372 pounds per bag, and for all 127 bags the net loss was 6.055 pounds per bag which amounts to 1.987 percent of the total weight of these 127 bags at shearing time.

COOPERATIVE WORK WITH THE FOREST SERVICE

Grazing management studies, in cooperation with the Forest Service, are beginning to reveal the effects of too heavy stocking on spring-fall sagebrush-grass type ranges. Palatable perennial weeds and finer grasses are being reduced in size and vigor. Portions of the weeds and bunchgrasses are dying, resulting in lower production of useable forage. As these larger plants begin to die, there is increased soil movement away from the base of the plants, producing a pedestalled effect. Annual weeds and grasses increase in size and abundance as the perennial species are reduced. In the openings between mature sagebrush bushes numerous young sagebrush plants become established adding more competition to the weakening perennial forage species. These studies show that to maintain sagebrush-grass type range in highly productive condition, proper stocking (1 acre in spring and 1 acre in fall per sheep month on good condition range) is essential.

Several species of grass in addition to crested wheatgrass are showing considerable promise for reseeding depleted ranges and abandoned farm lands. Because they have been little used in reseeding work to date, large scale tests of these species under range conditions are awaiting the development of an adequate seed supply.